What is claimed is:

1. A cable employing an oxide superconductor, comprising:

a flexible core member;

a plurality of tape-shaped oxide superconducting wires being laid on said core member with tension of not more than 2 kgf/mm^2 wherein each tape-shaped superconducting wire consisting essentially of an oxide superconductor and a stabilizing metal covering the same,

said plurality of tape-shaped superconducting wires forming a plurality of layers each being formed by laying a plurality of said tape-shaped superconducting wires in a side-by-side manner,

said plurality of layers being successively stacked on said core member without an insulating layer between the plurality of layers and the core member,

said core member providing said superconducting cable with flexibility,

said superconducting cable capable of maintaining a superconducting state at the temperature of liquid nitrogen,

said wires having substantially homogeneous superconducting phases along the longitudinal direction of said wire,

the c-axes of said superconducting phases being oriented substantially in parallel with the direction of thickness of said wire,

said superconducting wires being formed by grains aligned in parallel extending along the longitudinal direction of said wire,

said grains being stacked along the direction of thickness of said wire.

2. The superconducting cable of claim 1 having flexibility such that the superconductivity of said cable does not substantially deteriorate upon bending at a diameter of up to about 50 times the diameter of the cable.

3. The superconducting cable of claim 1, wherein said core member is selected from the group consisting essentially of metals, plastics, reinforced plastics, polymers, and composites.

4. The superconducting cable of claim 1, wherein said core member is a pipe having a surface selected from a spiral groove surface, a web-shaped surface, and a mat-shaped surface on its exterior which forms a surface for the tape-shaped superconducting wires.

5. The superconducting cable of claim 1, wherein an insulating layer is not present between the plurality of layers of tape-shaped wires.

6. The superconducting cable of claim 5, wherein after the first layer of tape-shaped wires are laid on said core member the subsequent tape-shaped plurality of layers are laid on the surfaces formed by the immediately prior layer of tape-shaped wires.

7. The superconducting cable of claim 1, wherein said wires are twisted within said tape-shaped stabilizing metal covering.

8. The superconducting cable of claim 1, wherein said tape-shaped wires are laid at a lay angle of up to about 90 degrees.

9. The superconducting cable of claim 8, wherein said tape-shaped wires are laid at a lay angle of from about 10 to about 60 degrees.

10. The superconducting cable of claim 9, wherein said tape-shaped wires are laid at a lay angle of from about 20 to about 40 degrees.

11. The superconducting cable of claim 1, further including at least two distinct groups of tape-shaped wire layers.

12. The superconducting cable of claim 11, wherein the lay angle of each successive layer of tape-shaped wires alternate in lay direction or pitch.

13. The superconducting cable of claim 12, wherein each said successive layer consists of at least two tape-shaped wires for a construction of four or more even layers.

14. The superconducting cable of claim 11, wherein a layer of dielectric material separates the core member from the layer of tape-shaped wires closest thereto.

15. The superconducting cable of claim 14, wherein the dielectric material is selected from the group consisting of polypropylene, polyethylene and polybutylene.

16. The superconducting cable of claim 11, wherein the at least two distinct groups of tape-shaped wire layers carries approximately equal amounts of the current flowing through the cable.

17. The superconducting cable of claim 11, wherein the first of the two distinct groups of tape-shaped wire layers carries greater than 50 percent of the current flowing through the cable.

18. The superconducting cable of claim 11, wherein the second of the two distinct groups of tape-shaped wire layers carries greater than 50 percent of the current flowing through the cable.

19. The superconducting cable of claim 16, wherein the group of tape-shaped wire layers furthest from the core member provides shielding of the current flowing through the other layers and reduces magnetic fields or eddy currents in the cable.

20. The superconducting cable of claim 1, wherein the stabilizing metal is selected from the group consisting of silver, silver alloys, nickel and nickel alloys.

21. The superconducting cable of claim 1, wherein each of said plurality of layers contains at least 2 tape-shaped wires per layer.

22. The superconducting cable of claim 1, wherein each of said plurality of layers contains at least 4 tape-shaped wires per layer.

23. The superconducting cable of claim 22, including an insulating layer between the second and third layer of said plurality of layers.

24. The superconducting cable of claim 22, including an insulating layer between each second and third layer of said plurality of layers.

25. The superconducting cable of claim 14, wherein the dielectric material has a maximum dielectric constant of about 3.0

26. The superconducting cable of claim 25, wherein the dielectric material has a maximum dielectric constant of about 2.3.

27. The superconducting cable of claim 14, wherein the dielectric material is biaxially oriented at a ratio of from about 5:1 to about 10:1 in the machine direction.

28. The superconducting cable of claim 27, wherein the dielectric material is biaxially oriented at a ratio of from about 5:1 to about 6:1 in the machine direction.

29. The superconducting cable of claim 27, wherein the dielectric material is further biaxially oriented up to about 2:1 in the cross machine direction.

30. The superconducting cable of claim 27, including embossing the biaxially oriented dielectric material so as to form irregular and/or random channels therein.

31. The superconducting cable of claim 30, wherein the dielectric material is embossed with channels having a depth of from about 0.5 to about 2 mm.

32. The superconducting cable of claim 30, wherein the embossing is performed by a roller at a temperature from about 80°C to about 140°C.

33. The superconducting cable of claim 29, wherein the dielectric material is embossed in a pattern which preferentially permits impregnant flow across the tape width.

34. The superconducting cable of claim 30, wherein the dielectric material is embossed in a pattern of irregular hills and valleys running across the tape.

35. The superconducting cable of claim 14, wherein the dielectric material is produced from material which contains organic color dye in a quantity within the range of 100 to 1000 parts per million.

36. The superconducting cable of claim 30, wherein the dielectric material is embossed in a pattern which increases the effective tape thickness.

37. The superconducting cable of claim 30, wherein the dielectric material is embossed in a pattern with up to about 0.2mm spacing between the adjacent peaks.

38. The superconducting cable of claim 37, wherein the dielectric material is embossed in a pattern with up to about 0.05mm spacing between peaks.

39. The superconducting cable of claim 14, wherein the dielectric material has a tensile modulus of at least 250,000 psi.